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ABSTRACT

The report details the project to develop programed instruction (in which each lesson is programed in small sequential steps) in visual orientation and mobility for multi-impaired low vision children (from preschool age to early adulthood). An introductory section reviews literature showing a need for orientation and mobility instruction; and describes a study to develop, refine, and validate a revised and improved manual in orientation and mobility for multiply impaired blind children. A positive field test with 42 children (4-13 years old) supported the effectiveness of the programed intervention system. A second section focuses on the adaptation of the Peabody Mobility Scale (PMS) for low vision children. A programed instructional system was organized into the same four separate components as the PMS (motor development, vision utilization, concept development, and mobility and orientation skills), and was field tested with 85 visually impaired multiply handicapped children. Ss who received instruction based on the programed intervention system demonstrated significant overall performance gains. Among appended materials are raw data, sample profiles, PMS excerpts, excerpts from programed instructional materials, and sample vision screening and teacher evaluation forms. (SBH)

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Final Report

Project No. 44 3CH60168

Grant No. G007605199

The Development of a Program in Orientation and Mobility for Multiply Impaired Low Vision Children

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Jacksonville, Illinois

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Indianapolis, Indiana

Missouri School for the Blind
St. Louis, Missouri

Muscatatuck Developmental Center
Butler, Indiana

Opportunity Center School
Birmingham, Alabama

Orange Grove Center for the Retarded, Inc.
Chattanooga, Tennessee

TABLE OF CONTENTS

Introduction	1
Review of the Literature	1
Study with Multiply Impaired Blind Children	4
Subjects	6
Experimental Design	6
Assessment Procedures	8
Intervention	8
Results	9
Discussion	11
The Adaptation of the Peabody Mobility Scale for Low Vision Children	13
Introduction	13
Development of the Programmed Instruction	17
Method	20
Site Survey	20
Subjects	20
Materials	25
Experimental Design	26
Assessment Procedures	30
Results	32
Pre-Posttest Results	32
Discussion	35
Dissemination	40
Bibliography	42

LIST OF TABLES AND FIGURES

TABLE	TITLE	PAGE
1	Summary of Covariance Analysis	9
2	Peabody Mobility Project Skill Areas for Low Vision Children	15
3	Facilities in Study	21
4	Demographic Characteristics of Experimental Population	23
5	The Pre- and Posttest Means for the Site and Distal Control Groups	32
6	Experimental and Control Group Adjusted and Unadjusted Means	33
7	Summary of Covariance Analysis	34
8	*t* Test Results for Pre-Posttest Differences in the Four Skill Areas for the Experimental Group	35

FIGURE		
1	Group Performance Over Test Conditions	10
2	Schematic Representation of Experimental Design	27

List of Appendixes

Appendix A Raw Data

Appendix B Project Consultants

Appendix C Sample Profiles

Appendix D Peabody Mobility Scale Excerpts

Appendix E Excerpts from Programmed Instructional Materials

Appendix F Vision Screening Forms

Appendix G Teacher Evaluation Forms

INTRODUCTION

The Development of a Program in Orientation and Mobility for Multiply Impaired Blind Children was conducted during 1976 by Harley, Wood, and Merbler (1976). During this study, a need for similar programmed instruction in orientation and mobility for low vision children was expressed by the cooperating teachers. The authors felt that the basic mobility skills needed for low vision multiply impaired children could be obtained by adapting and extending the programmed instruction that had been developed for the blind children in the previous study.

This report represents a detailed description of the project to develop programmed instruction in visual orientation and mobility for multi-impaired low vision children. The report will describe the development of the scales and the programmed instruction, the validation of the materials, and the dissemination activities.

Review of the Literature

A review of the literature reveals a need for special programs in mobility training for persons with low vision. Mobility instructors have contended that problems associated with partial sight require an approach which differs greatly from that normally used with the totally blind (McDonald, 1966; Richterman, 1966; Hughes, 1967). Vigoroso (1970) suggested a specific mobility training method based on the theory that visual recognition and discrimination develops in stages and that visual efficiency can be learned. Apple and May (1971) outlined an approach to mobility based on visual perception training of persons with low vision. A model program suggested procedures emphasizing depth perception, perception of motion, light adaptation, and perception and memory for distinctive features and form. Functional

assessment of low vision for mobility purposes included near vision, distant vision, and visual motor tasks. An incremental or step-by-step approach, to allow for an increase in task complexity or decrease in target visibility commensurate with the low vision person's visual skill, was advocated. Some general guidelines to the developing of a program were listed, but a manual was not developed. Programs in mobility for low vision children or multi-impaired low vision children were not found in the review.

A few studies are reported in the literature involving low vision multi-handicapped children as subjects. Bongers and Doudlah (1972) developed techniques for initiating visualmotor performance in visually impaired institutionalized retarded children. A study by Silva, Knight, and Friedlander (1973) involved the measuring of deaf-blind children's visual tracking ability and another study by the same authors (Friedlander, Silva, & Knight, 1974) investigated the effectiveness of an operant procedure used to evaluate severely handicapped children's visual acuity.

Harley, Merbler, and Wood (1975) devised a developmental scale for the measurement of orientation and mobility skills in multi-impaired blind children which was subdivided into subscales in four basic areas of measurement: locomotion, sensory, concept, and orientation and mobility skills. Programmatic instruction was developed for each of these identified skills. The programmatic instruction was field tested in a pilot study by five teachers of multi-impaired children during a 15-week period (Harley, Wood, & Merbler, 1975). The results showed significant gains in performance scores for a group of six multi-impaired blind children.

A review of the literature indicates that visual perceptual training can enable low vision children to use their improved residual vision efficiency for near vision tasks such as print reading. A need for programs in mobility training for low vision persons, and especially for multi-handicapped

low vision children was indicated. Since the programmed instruction in mobility in the previous project of 1975-76 (Harley, 1975) was primarily designed for children with light perception or less, it seemed logical to extend the instruction to include the large percentage of children with some useful vision.

Study with Multiply Impaired Blind Children

A related study by Harley, Wood, and Merbler (1976) was completed prior to the beginning of this project. The objectives of this project were to develop, to refine, and to validate a revised and improved manual in orientation and mobility for multiply impaired blind children. A manual was designed which consisted of assessment and programmed instruction components designed to be used by classroom teachers and parents.

The assessment instrument was designed to evaluate children's developmental levels in the areas of: motor, sensory, concept, orientation and mobility skills. The mobility skills included six basic subscales which had been found to be important to young blind children from previous ressearch. These skills included: 1) sighted guide; 2) seating; 3) trailing; 4) turning and maintaining orientation; 5) utilization of discriminable landmarks; and 6) environmental travel. The prerequisite skills in motor, sensory, and concept were defined in groups of subscales for each of these areas. Sensory skills included sound localization, tactual discrimination (hands), tactual discrimination (feet), and olfactory discrimination. The concept development prerequisite skills included body image, spatial relations, left-right discrimination, shape discrimination, size discrimination, and organization. The total scale consisted of 25 separate subscales which were grouped into four areas for convenience in scoring and profiling.

The assessment format was designed according to four guidelines: 1) The scale would be a criterion referenced instrument based on direct observation of the child's behavior; 2) Administration of the scale would require no verbal response from the child; 3) Items would be arranged in developmental order with each item partitioned into five developmentally sequenced sub-items; 4) The instrument could be easily administered and

scored by teachers or parents.

The general assessment procedure consisted of the examiner presenting the tasks to a child, observing the child's response, rating this response, and recording his rating on the test protocol. The administration time for the Peabody Mobility Scale varies between approximately one-half hour and two hours. The exact amount of time required for assessment depends upon the particular child's attention span and functional level. A complete kit of materials was developed to accompany the assessment instrument.

An interrater-reliability of 92% between examiner and second observer was computed on a sample of 10 multiply impaired blind children. Significant results at the .01 level in a multiple linear regression analysis indicated that a child's performance on the motor, sensory, and concept portions of the Scale was a good indicator of his performance on the mobility section of the Scale.

The programmed instruction component was designed so that purpose, task objectives, pretest, materials, educational program, and enrichment activities were provided for each subscale. Each lesson was programmed in small sequential steps with directions to the teacher or parent showing when to give commands, reinforce, repeat cycles, or proceed to the next steps. Enrichment activities were listed at the end of many of the lessons not only to provide variation but to insure sufficient practice to obtain the desired skill. The tasks included in the programmed instruction system were designed to be developmentally sequenced. This developmental sequencing was maintained both within lessons (e.g., progressive stages of learning to walk) and between lessons (e.g., crawling lesson before walking lesson).

Subjects

Forty-two subjects from nine sites were selected on the basis of five criteria. These criteria included:

1. Range in chronological age from 4 years to 13 years, 11 months.

2. Possess a visual handicap of light perception or less (i.e., functioning nonvisually in the environment).

3. Possess one additional handicapping condition.

4. Function on the preschool level between the ages of 2 and 6 years as measured on the Maxfield-Buchholz Social Maturity Scale.

5. Respond to verbal or manual communication.

Nine classroom teachers located at the sites from which the subjects were selected provided instruction in basic mobility skills to the experimental subjects using the programmed instructional materials. All of the teachers had a minimum of two years of classroom teaching experience.

Experimental Design

The study employed one experimental group and two control groups within a pre-posttest design. The subjects in the experimental group received daily intervention using the programmed orientation and mobility instruction materials. In contrast, children in the control groups continued their daily educational routines without special intervention programming based on the experimental intervention system. The content of the educational programs of the control children varied considerably over subjects as a function of the developmental level of each subject and his particular placement facility.

Two types of control groups were employed in the study. The two groups were distinguished on the basis of their proximity to the experimental group subjects. The first control group consisted of subjects located within the

same classroom as the experimental group subjects. The purpose of this "Site Control" group was to facilitate equation of the experimental and control subjects on the critical, potentially confounding variable of teacher and/or site effects.

To reduce the likelihood of experimental-control condition contamination, a second "distal" control group was employed in the study. Distal control group subjects were located at three sites at which no experimental intervention was planned. The inclusion of this group provided a baseline against which experimental-site control contamination could be readily detected and measured. Eighteen children were randomly selected for the experimental group, and nine children were included in each of the two control conditions.

The primary data analyzed in the field test study were the scores the subjects attained on the P.M.S. Each behavioral description was point weighted as follows:

Independent (I)	=	2 points
With Assistance (WA)	=	1 point
Not Performed (NP)	=	0 points
Not Applicable (NA)	=	--

Teacher evaluations of the instructional materials were solicited to supplement the empirical validation of the effectiveness of the intervention system. Two types of information were obtained including 1) teacher recommendations for modifications of specific training sequences, and 2) overall rating of training sequence effectiveness.

The teachers also collected continuous data on the student's progress as the students worked through the instructional materials. These data consisted of records of the number of trials a student passed and failed

during each training session based on the instructional materials. The teachers transmitted the completed data forms to the project staff on a weekly basis. Their data served two functions: 1) project staff monitoring of teacher intervention activities; and 2) teacher and project staff monitoring of the progress of the children. No formal statistical analysis was conducted on those data.

Assessment Procedures

Each subject was assessed in all P.M.S. content areas which were applicable for his handicapping conditions. The results of each subject's pretesting were graphed on special score profiles which provided a convenient visual summary of a subject's strength and weakness across the various P.M.S. content areas. Instructional program prescriptions were developed for each subject on the basis of his demonstrated developmental level in each skill comprising the P.M.S. The post intervention assessments were concluded following the same procedures used during pretesting.

Intervention

The 16-week field testing period was divided into two 8-week phases. The first 8-week period focused on sensory and motor components of the instructional materials. During this first phase, the teachers worked on an individual basis with the experimental subjects in their classrooms on the motor and sensory skill deficiencies indicated in the subject's instructional prescriptions. The teachers worked on two programmed lessons a day--one motor and one sensory. The teacher spent a mean time of 20 minutes per lesson per day.

The second 8-week period was devoted to the concept and mobility portions of the instructional materials and followed the same general procedures used during the first phase of the field testing.

Subjects were posttested on motor and sensory skills at the completion of the first 8-week period. Posttesting on concept and mobility skills occurred at the completion of the second 8-week period.

Results

Although the groups were constituted at random, the mean pretest scores of the groups were markedly different. Consequently, an analysis of covariance (Winer, 1971) was conducted on the P.M.S. scores to statistically adjust the experimental and control groups. The adjustment of the group means on the basis of Maxfield-Buchholz social age scores substantially reduced the initial disparity between the pretest means of the two groups. The significant main effect for the groups factor ($F = 7.33$, 1/33 d.f., $p = .05$) indicates that the P.M.S. scores of the experimental group subjects were higher than those of the control group subjects. A significant F ratio was also obtained for the test condition factor ($F = 87.83$, 1/33 d.f., $p = .01$). This important finding indicates that the post intervention scores of the subjects were significantly higher than their preintervention P.M.S. scores.

Table 1

Summary of Covariance Analysis

Source	Adjusted sums of squares	Degrees of freedom	Mean square	F
A	10774.298	1	10774.298	7.33*
Subj. W.A.	48488.37	33	1469.34	
B	6825.01	1	6825.01	87.83**
AB	5356/125	1	77.70	68.93**
Residual	2564.361	33		

*p .05

**p .01

Although the main effects for treatment conditions and groups were significant, they were relatively meaningless in light of the significant F ratio which was obtained for the interaction of groups x test conditions. A graph of this interaction is presented in Figure 1. This graph suggests that the experimental group subjects attained significantly higher P.M.S. scores following intervention with the programmed instructional materials than did the control group subjects who had not received intervention. Further inspection of Figure 1 also indicates that the control group subjects demonstrated only a slight change in performance level from the pretest to the posttest (i.e., pretest mean = 104.67, posttest mean = 106.89).

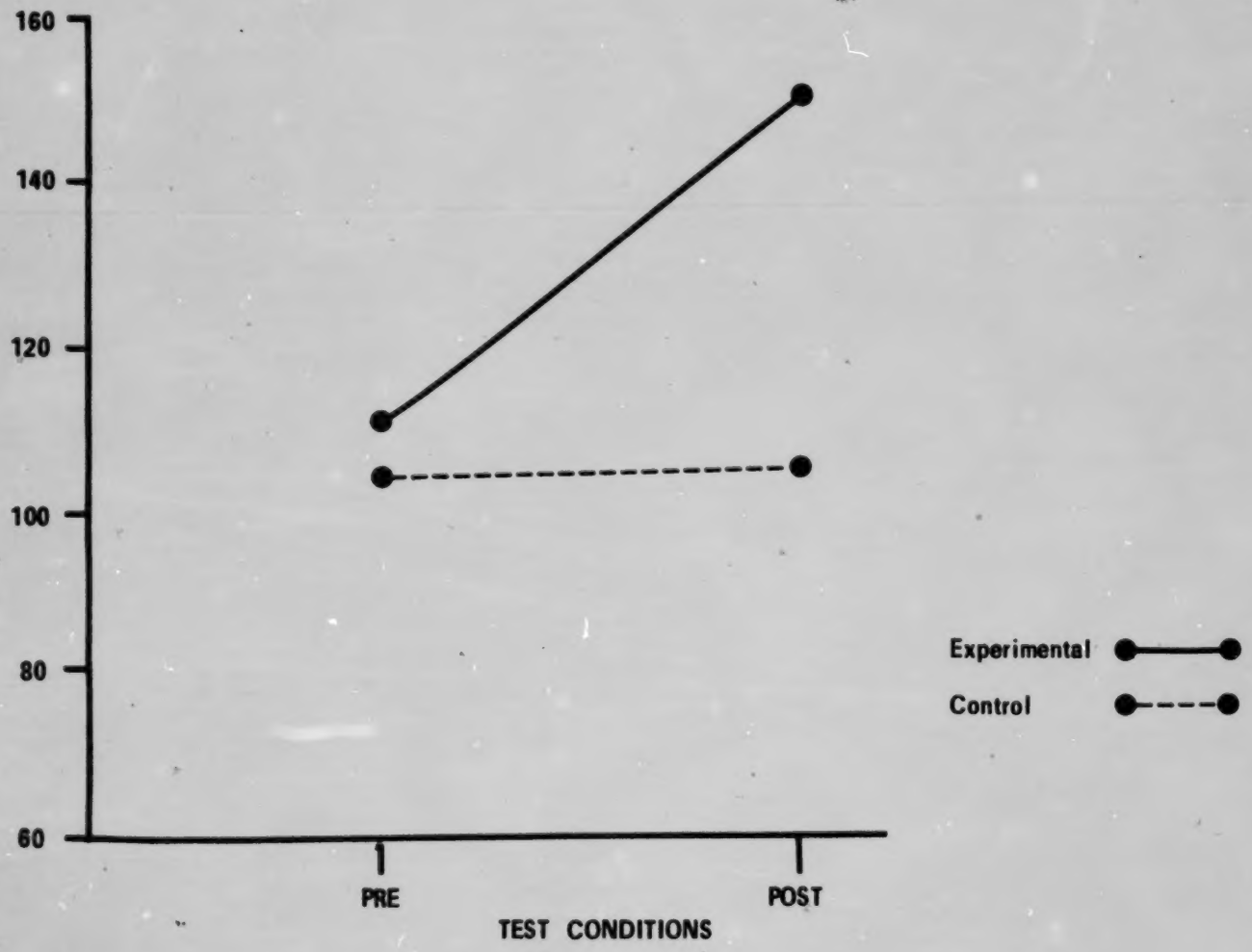

Figure 1. Group performance over test conditions.

t tests were performed on the pre- and postintervention scores of the experimental group subjects for the motor, sensory, concept, and mobility components of the programmed instructional materials. Significant *t* statistics were found for motor ($t = 5.34$, 18 d.f., $p = .01$), sensory ($t = 6.46$, 18 d.f., $p = .01$), concept ($t = 5.31$, 18 d.f., $p = .01$), and mobility ($t = 6.72$, 18 d.f., $p = .01$) instructional components. These findings indicated that substantial postintervention performance improvements were demonstrated by the subjects across all intervention system content areas.

Discussion

The purpose of the study was to develop an effective programmed intervention system in orientation and mobility for multiply handicapped blind children. The very positive results of the field test study indicated that this objective has been fulfilled. The children in this study who received instruction based on the programmed intervention system demonstrated significant overall performance gains as indicated by the results of the analysis of covariance. The significant *F* ratio obtained for the groups x test conditions interaction indicated that the difference in performance between the pre- and postintervention period measures was higher for the experimental group compared to the control group. Since other extraneous factors such as teacher or site effects were controlled (i.e., through the site control group), the most plausible explanation of this differential performance between the groups was the intervention the experimental subjects received. The results of the individual *t* tests indicated that the four instructional areas of the intervention system (i.e., motor, sensory, concept, and mobility) were all effective as a basis for a training program.

An unexpected problem in the field test study concerned the inequality of the mean P.M.S. pretest scores for the experimental and control groups.

This inequality was apparently an artifact of the randomization process. Although the adjustment of the subjects' P.M.S. scores on the basis of their Maxfield-Buchholz scores did not result in complete mean pretest score equality, the similar adjustment of posttest P.M.S. scores, in conjunction with the magnitude of the difference between the posttest mean P.M.S. scores of the experimental and control groups, provides very substantial evidence for superior experimental group postintervention performance beyond any mild to moderate initial performance discrepancy between the groups.

Conclusions

In addition to validating the intervention system, the results of the field test study also provided information on two relevant educational issues concerning multiply handicapped blind children. First, the significant performance gain demonstrated by the experimental group subjects indicates that severely multiply handicapped blind children can learn basic motor, sensory, concept, and mobility skills. The optimal instructional approach for training these skills seems to be through the use of carefully programmed training sequences. This contention is supported by the failure of the control group children to demonstrate significant progress despite the fact that many of these control subjects (both site and distal) were receiving daily training in basic motor, sensory, and concept skills in a less structured manner as a part of the teacher's normal curriculum.

Secondly, the results of the field test study also indicated that classroom teachers can effectively train multiply handicapped blind children in basic orientation and mobility skills if they are provided with programmed instruction. Thus, it would seem that classroom teachers could function as principal basic mobility trainers for multiply handicapped blind children if their particular programs lack a mobility specialist.

THE ADAPTATION OF THE PEABODY MOBILITY SCALE FOR LOW VISION CHILDREN

Introduction

During the Peabody Mobility Project's first year (Harley, Wood, and Merbler, 1976), the Peabody Mobility Scale was found to be a useful instrument for assessing the orientation and mobility skills of multiply impaired blind children. It was felt that the Scale could be adapted for use with multi-handicapped low vision children through addition, deletion, and modification of the items in the 25 subscales in the areas of motor skills, sensory skills, conceptual skills, and orientation and mobility skills. The big difference would be the revisions required by the child's ability to use his remaining vision in the performing of orientation and mobility tasks.

The first step was to obtain all the information available from the literature. Manuals and guides for assessment of vision in children were examined and visual development scales for infants and young children were studied. Consultants were also employed by the project to make suggestions for the development of the new scale in utilization of vision.

After considerable study, a new subscale area was developed for Developmental Vision and Visual Utilization. This new section of the assessment scale was designed to replace the section on Sensory Training which was used with blind children with emphasis on tactual discrimination and sound localization. Seven new sections were developed with emphasis on visual perception assessment from the lowest level of visual awareness and fixation to the highest level of directionality and visual perception of motion. Scales were designed for all the basic uses of vision which appeared to be prerequisites for the development of efficient orientation

and mobility skills. These scales also included visual scanning and tracking, eye-hand coordination, eye-foot coordination, color discrimination, and discrimination of direction.

After careful examination of the mobility section of the Peabody Mobility Scale, it was decided that the items were generally inappropriate for multi-handicapped low vision children. Two sections--"Seating" and "Turning and Maintaining Orientation"--were dropped because of their inappropriateness for low vision children. The section of "Trailing" was revised extensively with the emphasis placed on sight utilization. The "Utilization of Discriminable Landmarks" was felt to be so important that it was also revised to include more emphasis on sight utilization.

The Motor Development and Concept Development sections of the Scale were kept intact but with adaptations made in individual items for low vision children. The Motor Development Scale included "Basic Movement," "Creeping and Crawling," "Standing," "Walking," "Ascending Stairway," "Descending Stairway," "Running," "Jumping," and "Climbing." The Concept Development included "Body Image," "Spatial Relations," "Left-Right Discrimination," "Shape Discrimination," "Size Discrimination," and "Organization." Table 2 summarizes the final product of these revisions and presents the complete content of the subscales for the revised P.M.S. for low vision children.

The guidelines followed in the development of the original P.M.S. were followed in the design of new and revised subscales.

The first guideline was that the Scale would be a criterion referenced instrument with scores based on direct observation of the behaviors of interest. The primary concern when using the criterion referenced approach is whether the child performs a specified behavior with an acceptable level

Table 2

Peabody Mobility Project
Skill Areas
for Low Vision Children

I. Motor Development

- A. Basic Movement
- B. Creeping and Crawling
- C. Standing
- D. Walking
- E. Ascending Stairway
- F. Descending Stairway
- G. Running
- H. Jumping
- I. Climbing

II. Concept Development

- A. Body Image
- B. Spatial Relations
- C. Left-Right Discrimination
- D. Shape Discrimination
- E. Size Discrimination
- F. Organization

III. Vision Skills

- A. Visual Awareness and Attention
- B. Scanning and Tracking
- C. Eye-hand Coordination
- D. Eye-foot Coordination
- E. Discrimination of Colors
- F. Discrimination of Direction

IV. Mobility Skills

- A. Using Landmarks in a Room
- B. Visual Trailing
- C. Using Landmarks in a Building
- D. Squaring Off
- E. Using Landmarks in Outdoor Travel
- F. Generalization Lessons
  1. Outdoor Travel
  2. Outdoor Travel
  3. Outdoor Travel

of proficiency rather than how well he performs a behavior relative to his peers.

The second guideline was to devise a scale which could be administered with minimal verbal interaction between the examiner and the child. Consequently, whenever practical, a "match to sample" response mode was adopted to provide a child without expressive language a nonverbal means of communicating his response. This provision for a nonverbal response mode was crucial if the Scale was to be suitable for lower functioning children.

The third guideline was that the items would be arranged in developmental order with each item partitioned into five developmentally sequenced sub-items. The goal of this guideline was achieved through task analyzing each of the items and consulting relevant literature on the developmental progression of the behavior to be assessed.

The fourth guideline was to develop an instrument which could be administered easily by teachers or parents. Consequently, very explicit instructions were provided and the criterion behaviors for passing each sub-item were clearly defined in observable terms.

Samples of the final product of this developmental effort, items from the revised P.M.S., are presented in the Addendum to this Final Report. The number code (e.g., 1.4.1.P.) provides an index of the item's location in the scale. The first digit is the scale section (1 = Motor, 2 = Vision Utilization Skills, 3 = Concept, 4 = Mobility); the second digit is the item's sequential position within a section; the third number denotes the particular sub-item of an item; and the letter (P or S) denotes whether an instruction describes an administration procedure or a scoring criterion. The administration procedures are carefully described for each item and sub-item, including position of the examiner and the child, context,

materials, and presentation procedures. In the scoring section, the criterion behavior is precisely defined and a scoring grid is provided for recording the examiner's evaluations. Three scoring options are available as follows: 1) - = not performed--the child does not demonstrate the criterion response; 2) NA = not applicable--the child is unable to demonstrate the criterion response due to a physical impairment; and 3) + = performed--the child demonstrates the criterion response.

The general assessment procedure consists of the examiner presenting the tasks to a child, observing the child's response, rating this response, and recording his rating on the test protocol. The administration time for the P.M.S. varies between approximately one-half hour and two hours. The exact amount of time required for assessment depends upon the particular child's attention span and functional level. A complete kit of materials has been developed to accompany the assessment instrument.

Several statistics have been computed on various parameters of the revised P.M.S. Interrater-reliability, which provides a measure of how well the criterion behaviors are defined in observable terms, was computed using a percentage of agreement method. An examiner and second observer simultaneously and independently rated a group of 10 multiply impaired blind children as the children were administered the revised P.M.S. The examiner and observer were both experienced at providing mobility instruction to lower functioning children. The obtained percentage of agreement was 92% which indicates that the revised P.M.S. has high interrater-reliability.

Development of the Programmed Instruction

The programmed instructional system was organized into the same four separate components as the P.M.S.: motor development, vision utilization, concept development, and orientation and mobility skills. All of the items

within each area of the program are divided into five sub-items which also correspond to the Scale. The overall design is intended to provide the teacher with a beginning point for the child after assessment.

The tasks in the program are sequenced developmentally which facilitates the child's progress from the entry point to the terminal objective through successive approximations. The entire program is based on behavior modification procedures, using positive reinforcement exclusively. Reinforcers are selected by the child's teacher, based on the response level of the child.

The numbering system used in the programmed instruction corresponds to the one used in the P.M.S. For example, the first number (1, 2, 3, 4) refers to the section (motor development, sensory skills, etc.). The second number (1, 2, 3 . . .) refers to item, and the third number (1, 2, 3, 4, or 5) designates the sub-item.

Each lesson was divided according to purpose, terminal objective, materials/setting, activity objective, recording procedure, and training activity. Samples of the intervention program are presented in Appendix E of this report.

The general procedure followed a design which required each step to be broken into three major parts:

1. A command or direction was given to the student. If the student responded correctly in six consecutive trials, he proceeded to the next step.

2. If the student failed to respond correctly in six consecutive trials, the trainer proceeded to part B which required fully guiding the student through to the completion of the task.

3. Assistance or prompting was gradually reduced until the student

responded correctly and independently in six consecutive trials. Then, the trainer proceeded to the next step of the activity.

Some of the activities required special materials such as penlights, construction paper, balls, spoon, or materials of various shapes, sizes, colors, and textures. A kit of these special materials was given to each teacher along with the programmed instruction materials. Larger materials or furniture such as wastebasket, chairs, and tables were to be improvised by the instructor from the classroom.

The recording procedure was defined according to number of trials, definition of trial, and criteria for a correct response. Twenty trials was defined as the number of trials to be given before going to the next part of a step of a training activity.

During the previous study with blind children, it was determined that some of the tasks were too complex even at entry level for many of the children. This phenomenon brought about a decision to develop prerequisite training activities for certain lessons. The major purpose of the prerequisite activities was to build a specific response into the child's repertoire and to attempt to bridge the gap between the child's existing developmental level and the beginning point of the programmed instructional materials. These prerequisite lessons were adapted for use with the low vision children. Samples of the prerequisite skills are presented in Appendix E of this report.

Just as in the previous study with blind children, several of the tasks utilize a match to sample response mode, but the tasks are structured in a way that does not preclude a verbal response. A continuum of acceptable responses was included in the intervention materials to insure the compatibility of the materials with groups of students functioning on diverse

developmental levels. The provision of nonverbal responding was critical in view of the severe verbal language deficits which are frequently associated with lower functioning children. However, higher functioning, verbal students are not penalized or limited by a less efficient response mode.

Method

Following the development of the programmed instructional system, the next phase of the Peabody Low Vision Mobility Project consisted of field testing this system to determine its effectiveness as the basis for a teacher implemented basic orientation and mobility program for severely handicapped blind children. This section of the Final Report describes in detail the steps involved in implementing the field test study including: site and subject selection, materials, assessment and intervention procedures, results, and discussion of the results.

Site Survey

A total of 18 facilities (see Table 3) serving visually impaired and/or developmentally delayed children within a 500-mile radius of Nashville, Tennessee, were surveyed early in September, 1976. They were asked to respond with the number of children enrolled in their programs who were both visually impaired and demonstrated at least one additional handicapping condition. The results of this survey indicated eight facilities which seemed to have a substantial number of children who qualified for inclusion in the instructional materials field testing program. These facilities are designated by asterisks in Table 3. The eight facilities included: four state residential schools for the blind; three developmental centers; and one public school program.

Subjects

A total of 85 children enrolled in the nine selected facilities were

Table 3

Facilities in Study

Director of Special Education
Atlanta Public School System
Atlanta, Georgia

Ms. Marjorie N. Cardwell
Assistant Superintendent for
Residential Services
Greene Valley Developmental Center
P.O. Box 3087
Greeneville, TN 37743

Dr. W. W. Elliott
* Alabama Institute for Deaf and Blind
P.O. Box 698
Talladega, Alabama 35160

Director of Special Education
Birmingham Public School System
Birmingham, Alabama

Durwood A. Hutchinson, Superintendent
* Indiana School for the Blind
7725 College Avenue
Indianapolis, Indiana 46240

Don Miller, Director
Silvercrest Disability and Chronic
Disease Facility
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Mr. Gary Coker, Principal
Tennessee School for the Blind
Donelson, TN

Director
* Opportunity Center School
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Director
* Muscatatuck Developmental Center
Butler, Indiana

Superintendent
* Missouri School for the Blind
St. Louis, Missouri

* = Site included in study.

screened as potential subjects for the instructional materials field test. The final experimental population was constituted on the basis of five criteria. These criteria included:

1. Range in chronological age from 4 to 28 years.

2. Possess a visual handicap of 6/200 to light projection as measured on a symbol chart (Faye, 1968) or as determined through direct observation by the experimenters or children's teachers.

3. Possess at least one additional handicapping condition.

4. Function on the preschool level between the ages of 2 and 6 years as measured on the Maxfield-Buchholz Social Maturity Scale.

5. Respond to verbal or manual communication.

Of the pool of 85 children, a total of 52 met the selection criteria. The preponderance of the children who were not selected were rejected on the basis of Criterion 2. Subject status relative to Criterion 2 was determined through informal observation by the experimenters, anecdotal reports by the children's classroom teachers and/or houseparents, and formal visual acuity reports when available and deemed reliable. Eight children of the 52 selected were withdrawn from the experimental population during the course of the study due to chronic illness and extended absence. Table 4 presents the chronological ages, social maturity scores (as determined by the Maxfield-Buchholz), facility placement, and additional handicapping conditions of the remaining 44 subjects. The mean chronological age (CA) of the subjects was 11 years, 2 months, with a range of 5 years, 1 month, to 27 years, 7 months. The social ages of the subjects ranged from 1 year, 10 months to 6 years, 0 months with a mean of 4.71.

Participating Teachers

Fourteen classroom teachers located at the sites from which the subjects

TABLE 4

DEMOGRAPHIC CHARACTERISTICS OF EXPERIMENTAL POPULATION

Subject Code No.	SA	CA	Facility Placement
13E	2-9	9-1	KSB
14E	2-8	7-6	KSB
16E	4	6-4	ISB
18E	5-3	8-6	ISB
20E	2-8	5-7	ISB
21E	2-11	9-6	Hope
23E	3-0	16-8	Hope
24E	3-0	18-3	Hope
25E	5-6	13-4	MSB
26E	4-4	13-8	MSB
27E	5-2	12-8	MSB
28E	3-6	8-12	MSB
33E	3-0	11-3	ASB
34E	3-8	9-5	ASB
35E	4-6	11-10	ASB
39E	5-5	11-4	ASB
43E	3-7	9-3	OG
44E	3-2	15-6	OG
45E	2-0	15-6	OG
46E	3-0	8-7	OG
47E	3-11	16-9	OG
17C	5-7	7-4	ISB
19C	5-10	9-10	ISB
22C	2-8	6	Hope
25C	2-9	17-8	Hope

Table 4 (cont.)

Subject Code No.	SA	CA	Facility Placement
26C	4-0	8-2	Hope
31C	5-0	11-5	MSB
32C		8-5	ASB
36C	5-8	6-8	ASB
37C	5-8	7-4	ASB
40C		13-2	OG
41C	3-1	27-7	OG
38DC		11-7	OC
50DC	4-9	9-5	Ill
49DC	6-0	13-7	Ill
51DC	3-9	11-5	Ill
52DC		14-3	Ill
53DC	5-6	8-10	Ill
54DC	6-0	14-1	Ill
55DC	2-8	10-9	Ill
56DC	2-8	10-11	Mus.
57DC		12-4	Mus.
42DC		5-1	OC

Key to Facility Placement:

ASB Alabama Institute for the Deaf & Blind

Hope The Hope School

ISB Indiana School for the Blind

MSB Missouri School for the Blind

KSB Kentucky School for the Blind

OG Orange Grove Center

Mus. Muscatatuck State Hospital & Training Center

OC Opportunity Center School

Ill Illinois Braille and Sight Saving School

were selected provided instruction in basic mobility skills to the experimental subjects using the programmed instructional materials. The teachers were selected on the basis of administrative feasibility.

Three of the teachers were physical education specialists for multiply handicapped children, two teachers at one site were mobility instructors, and the remaining nine participants were classroom teachers for multiply handicapped children. All of the teachers had a minimum of two years of classroom teaching experience.

Materials

The Revised Peabody Mobility Scale was used for the assessment of the subject's level of skill development in motor, visual functioning, concept, and basic visual mobility domains. The Revised P.M.S. was described earlier.

The Maxfield-Buchholz Social Maturity Scale for Preschool Blind Children (Maxfield-Buchholz, 1957) was used to assess the subject's general level of functioning. The Scale is an adaptation of the Vineland Social Maturity Scale (Doll, 1937) and follows an interview format. It consists of 95 items arranged according to the developmental year level of expected item fulfillment within the skill categories of a) Self-help General, b) Self-help Dressing, c) Socialization, d) Locomotion, and e) Occupation. The Maxfield-Buchholz Scale yields a Social Age (SA) which is the sum of the number of months credit a child earned as a function of the number of items he passed, and a Social Quotient (SQ) which is the ratio of a child's chronological age to his Social Age. The Maxfield-Buchholz Scales were administered by research site personnel.

The Peabody Programmed Instruction System in Visual Orientation and Mobility was used as the basis of the training program to determine its

instructional effectiveness. A detailed description of this training system is included later in this report.

Experimental Design

Two control groups and one experimental group were employed for the study within a pre-posttest design. Experimental group subjects received daily intervention using the programmed visual orientation and mobility instruction materials. Children in the control groups continued their daily educational routines without special intervention programming based on the experimental intervention system. The substance of the educational programs of the control children varied substantially over subjects as a function of the developmental level of each subject and his particular placement facility. Several control children were receiving instruction in skill areas very similar to those included in the experimental instructional materials while other control children were receiving maintenance care (e.g., toileting, feeding, etc.) in an unstructured ward program.

Two forms of control groups were constituted in the study. Proximity to the experimental group subjects distinguished the two groups of subjects. One control group consisted of children located within the same classroom as the experimental group subjects. This "Site Control" group was designed to facilitate equation of the experimental and control subjects on the important, potentially confusing variable of teacher and/or site effects. The need foradjusting of experimental and control conditions for teacher and site effects was demonstrated by the results of previous research by the investigators (Harley, Wood, & Merbler, 1974; Harley, Wood, & Merbler, 1976) which indicated wide variation in teacher qualifications and extensiveness of programming both within and between facilities serving multiply handicapped visually impaired children. The presence of control children within the

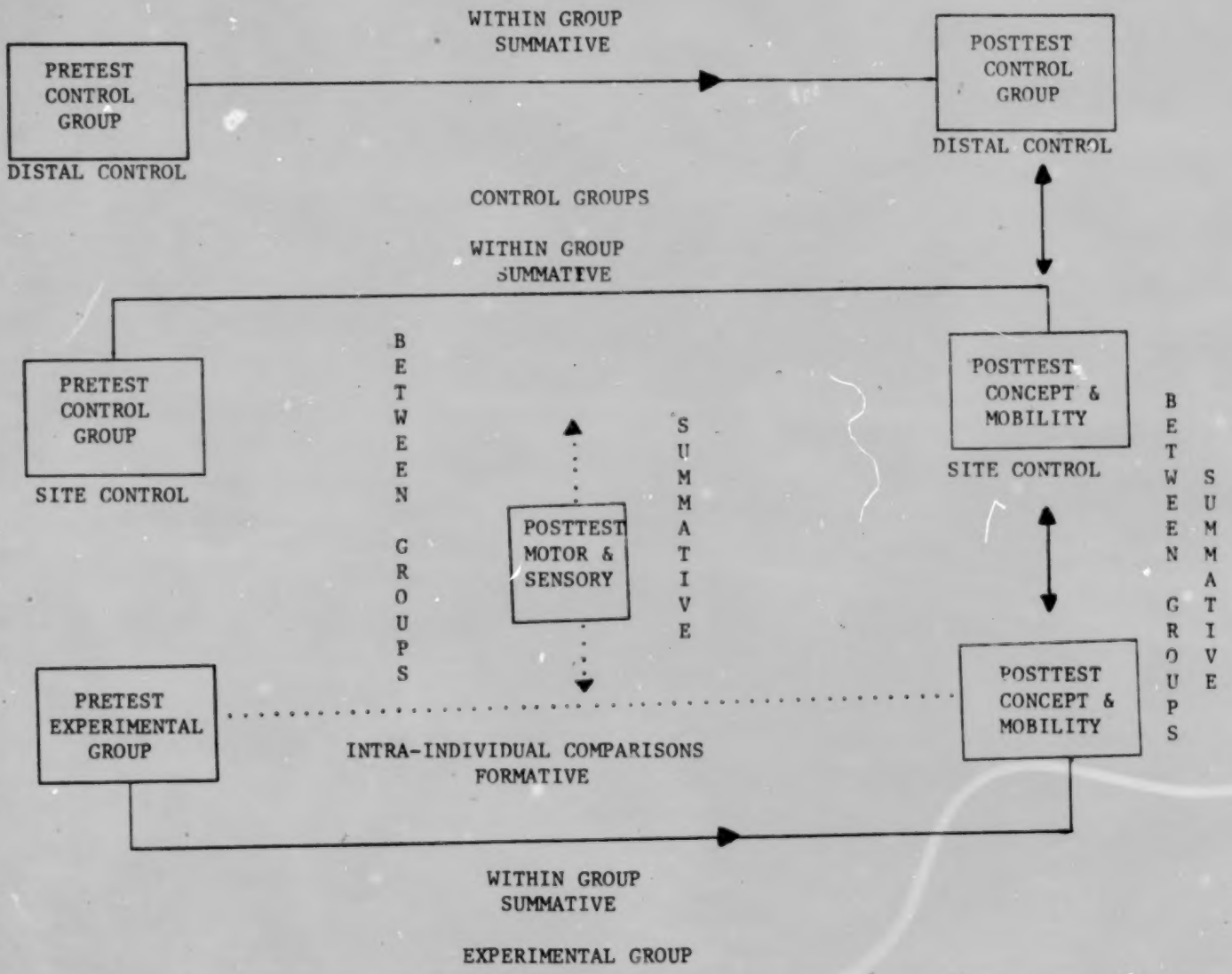

FIGURE 2. SCHEMATIC REPRESENTATION OF EXPERIMENTAL DESIGN

same classrooms as experimental children insured that both experimental and control children within sites had essentially identical educational opportunities with the exception of programmed intervention on visual orientation and mobility using the experimental instructional materials.

Although the use of on-site control children minimized the effect of a potentially very powerful confounding variable, it simultaneously increased the possibility of a second confounding event--specifically, control group contamination as a result of proximity to the experimental treatment.

A second "distal" control group was employed in the study to reduce the likelihood of experimental-control condition contamination. Distal control group subjects were located at two sites at which no experimental intervention was planned. Hence, subjects in the distal conditions were totally isolated from the effects of the experimental treatments. A baseline against which experimental-site control contamination could be readily detected and measured was provided by this group.

The experimental and control groups were constituted through two levels of randomization. The distal control sites were chosen at random from among the eight facilities participating in the study. Within each of the remaining six facilities, subjects were randomly assigned to either the experimental or on-site control conditions. Twenty-six children were initially assigned to the experimental group, and 13 children were included in each of the two control conditions. However, due to subject loss, the final group numbers were 22 subjects in the experimental group and 11 children in each control group.

The scores on the Revised Peabody Mobility Scale were the primary data analyzed in the field test study. Although the Revised P.M.S. is not designed for a global score evaluation of a pupil's mobility proficiency,

it was necessary to quantify the behaviors a subject demonstrated during assessment to expedite analysis and evaluation of the effects of the intervention system. Consequently, each behavioral description was point weighted as follows:

Independent (I)	=	2 points
With Assistance (WA)	=	1 point
Not Performed (NP)	=	0 points
Not Applicable (NA)	=	--

The points a subject earned for each item (5 sub-items per item equaled a possible score range of 0 to 10 points per item) were tallied over each sub-section (e.g., motor, vision). The sub-section totals were then summed to obtain a full scale Revised P.M.S. score.

Subjective evaluations of the instructional materials were solicited from teachers to supplement the empirical validation of the effectiveness of the programmed instruction. Recommendations for modifications of specific training sequences were obtained from each teacher. A copy of the form used for this evaluation purpose is included in Appendix G. The teachers were requested to complete these evaluation forms after using each training sequence.

Continuous data on the student's progress in the programmed instruction was reported by each teacher. This information consisted of records of the number of successful and unsuccessful trials during each training session based on the instructional materials. The completed data forms were transmitted by the teachers to the project staff on a weekly basis. Two functions were served by these data: 1) monitoring of teacher intervention activities; and 2) monitoring of the weekly progress of the subjects. A formal statistical analysis was not conducted on these data.

Assessment Procedures

The Revised P.M.S. assessments were conducted in accord with the established general guidelines for the administration of the scales. The subjects were assessed in all Revised P.M.S. content areas which were applicable given their handicapping conditions. Modifications were necessary in assessment procedures on the basis of special handicaps. For example, a subject with a severe motor impairment was administered the first sub-item of the walking item. If the subject failed to demonstrate even a minimal motor response, assessment of walking was terminated and assessment continued with the next scale item. Scale items (e.g., standing, shape discrimination) were administered until a subject achieved his developmental level for a particular skill. For example, if a subject passed the first two sub-items in standing, but failed the third sub-item, the subject's assessment for "standing" was terminated with this third sub-item and he received credit for the first two sub-items he had passed. Measurement for a particular skill was also completed if a subject received a score "With Assistance" for a sub-item. On such occasions, a subject received full credit for all previous sub-items he did pass within the skill item and partial credit for the sub-item for which he had required assistance.

Pretesting results for each subject were graphed on special score profiles which provided a convenient visual summary of a subject's strength and weakness across the various Revised P.M.S. content areas. Sample profiles are presented in Appendix C. Prescriptions of programmed instruction were developed for each subject on the basis of the child's demonstrated developmental level in each skill comprising the Revised P.M.S. A program was planned for selected skills in which a subject scored lower than 6 points (i.e., failed to meet criteria for the first three sub-items for a given

skill).

The posttesting was conducted following the same guidelines used during pretesting. Posttesting of the experimental and site control groups was conducted in two phases, corresponding to the two phases of intervention. The experimental and site control groups were posttested on motor and concept skills in March, 1977, and on vision and mobility in May, 1977. The distal control subjects were posttested in all content areas (i.e., motor, vision, concept, and mobility) in May, 1977.

Intervention Procedures

The programmed instructional materials were field tested during a 16-week period beginning in January, 1977, and extending through May, 1977. During the first month project staff visited each experimental site to orient the subject's classroom teachers to interpretation of the experimental subjects' individual instructional prescription, the use of the programmed instruction, and the data collection system. Verbal explanation of the materials and discussion of anticipated problems helped to orient the teachers. The clarity of the general directions for the use of the instructional materials was determined by the questions of the teachers. The participants were invited to telephone or write the project staff regarding any questions which arose during the intervention period.

The total field testing period was divided into two 8-week phases. The first 8-week period was designed to test the motor and concept components of the instructional materials. Throughout this first phase, the teachers worked on an individual basis with the experimental subjects in their classrooms on the motor and concept skill areas indicated in the subject's instructional prescriptions. Two programmed lessons a day, one motor and one concept, were presented by the teachers. The teacher was

asked to spend 20 minutes per lesson per day. Sometimes, the teachers delegated responsibility for implementation of the lessons to their classroom aides. During the second 8-week period the vision and mobility portions of the instructional materials were field tested following similar general procedures.

Posttesting of subjects on motor and concept skills occurred at the completion of the first 8-week period. Subjects were tested on vision and mobility skills at the completion of the second 8-week period.

Results

Pre-Posttest Results

The raw data resulting from the P.M.S. assessments are presented in Appendix A. Table 5 presents the pre- and posttest means for the site and distal control groups. An inspection of Table 5 indicates that the pre-post assessment performances of the two control groups were equivalent. This finding suggests that no experimental site control group contamination occurred during the intervention period. Consequently, the site and distal control groups were collapsed into one control group for the various statistical analyses.

Table 5

The Pre- and Posttest Means for the Site and Distal Control Groups

Group	Pretest mean	Posttest mean
Site Control	179.09	174.18
Distal Control	149.26	144.36

The mean pretest scores of the experimental and control groups were markedly different although the groups were constituted at random (see Table 6). As a result, an analysis of covariance (Winer, 1971) was conducted on the

P.M.S. scores to statistically equate the experimental and control groups. The pretest scores of the subjects were used as the covariate to adjust posttest means. The adjusted and unadjusted means for the pre- and posttest conditions for the experimental and control groups (collapsing over the distal and site control subjects) is presented in Table 6. Inspection of the Table indicates that the adjustment of the group means on the basis of pretest scores substantially reduced the disparity between the experimental and control groups.

Table 6

Experimental and Control Group Adjusted and Unadjusted Means

Groups	Unadjusted means		Adjusted posttest means
	Pretest	Posttest	
Experimental	122	163.09	184.49
Control	164.23	164	142.59

The results of the analysis of covariance are summarized in Table 7. The significant main effect for the treatment factor (i.e., intervention) indicates that the posttest P.M.S. scores of the experimental group subjects were significantly higher than those of the control group subjects.

Table 8 presents the results of t tests performed on the pre- and postintervention scores of the experimental group subjects for the motor, vision, concept, and mobility components of the programmed instructional materials. Significant t statistics were found for motor ($t = 5.586$, $p < .005$), vision ($t = 5.872$, $p < .005$), concept ($t = 4.332$, $p < .005$), and mobility ($t = 2.521$, $p < .05$) instructional components. These findings indicated that substantial postintervention performance improvements were demonstrated by the subjects across all intervention system content areas.

Table 7

Summary of Covariance Analysis

Source	Adjusted sums of squares	Degrees of freedom	Mean square	F
Treatment	16964.261	1	16964.261	29.001*
Error	23983.055	41	584.952	
Total	40947.316	42		

*p .01

Table 8

t Test Results for Pre-Posttest Differences in the Four Skill Areas for the Experimental Group

Instructional area	t observed
Motor***	5.586*
Vision	5.872*
Concept	4.332*
Mobility	2.521**

*p .005
**p .05
***N = 21

Discussion

The purpose of this study was to develop an effective programmed intervention system in orientation and mobility for multiply handicapped low vision children. A previous study with multiply handicapped blind children indicated positive results with a similar type of programmed instruction. The very positive results of the field test study indicated that this objective has been fulfilled also for the low vision children. The children in this study who received instruction based on the programmed intervention system demonstrated significant overall performance gains as indicated by the results of the analysis of covariance. The significant F ratio obtained for the groups x test conditions interaction indicated that the difference in performance between the pre- and postintervention period measures was higher for the experimental group compared to the control group. Since other external factors such as teacher or site effects were controlled (i.e., through the site control group), the most acceptable explanation of this differential performance between the groups was the intervention received by the experimental subjects. The results of the individual t tests for pre-posttest differences indicated that the four skill areas of the intervention

system (i.e., motor, vision, concept, and mobility) were all effective as a basis for a training program.

The inequality of the mean P.M.S. pretest scores for the experimental and control groups was an unexpected problem in this field test study. This inequality was probably due to an artifact of the randomization process. The control group unadjusted pretest mean was much higher than the experimental group unadjusted mean. In the previous study with blind children, the experimental group unadjusted pretest mean was much higher than the mean of the control group. After the adjustment of the subjects' posttest group means on the basis of their pretest group means, substantial evidence was provided for superior experimental group postintervention performance beyond any mild to moderate initial performance discrepancy between the experimental and control groups.

As in the previous study with multiply handicapped blind children, the children who served as subjects in this study represented a fairly good cross pattern of handicapping conditions which can be encountered when providing training services to multiply handicapped blind children and youth. The experimental population subjects generally demonstrated severe developmental (cognitive) delays. In addition, behavioral problems, physical impairments, severe expressive receptive language deficits, and auditory impairments were noted in the group. The breadth of the field test sample should insure the general applicability of the intervention system for children classified as multiply handicapped low vision even though every potential combination of multiple impairments was not included in the sample. Since many of the skills included in the assessment and training materials are also necessary for nonvisually impaired children, the newer sections of the intervention system (e.g., vision and mobility) may be useful for training,

for example, trainable level retarded children.

The results of the field test study provided information on several relevant educational issues concerning multiply handicapped low vision children. The significant performance gain demonstrated by the experimental group subjects indicates that severely multiply handicapped low vision children can learn basic motor, visual, concept, and mobility skills. These skills can be learned optimally through the use of carefully sequenced training materials. This conclusion is substantiated by the failure of the control group children to demonstrate significant progress notwithstanding the fact that many of these control subjects (both site and distal) were receiving daily training in basic motor, visual, and concept skills in a less structured manner as a part of the teacher's normal curriculum.

The results of this experimental study also demonstrated that classroom teachers can effectively train multiply handicapped low vision children in fundamental orientation and mobility skills if they are provided with appropriate programmed instruction. Therefore, it could be concluded that classroom teachers could function as principal basic mobility instructors for multiply handicapped low vision children if their particular programs lacked a mobility specialist. Classroom teachers could also supplement the mobility instruction services of an on-site specialist if provided with programmed instructional materials.

The participating teachers suggested several additional areas for refinement of the intervention system. Although the intervention system was designed for use with multiply handicapped low vision children, several adaptations were nonetheless required for specific handicaps. For example, several of the hearing impaired children were unable to communicate even with manual communication, and a nonverbal system of communication was used

by the teachers. For one physically impaired child restricted to a wheelchair, several of the motor tasks were not applicable. Several of the children included in the study had severe hearing impairments which required that the teacher adapt the verbal instruction to a manual communication mode. Therefore, although the programmed materials provided precise training sequences, some teacher initiative and creativity for actual training implementation were necessitated by the individual needs of the children. Provision of instructions for adapting the materials for special handicaps could be offered in a supplementary manual.

In addition to the need for supplementation of the instructional materials, the intervention system required adjustment for the wide variation in general development level which is a characteristic of the multiply handicapped low vision population. The training sequences (e.g., squaring off) were designed for children functioning developmentally at a point slightly below the middle of a developmental continuum which ranged from severe to mild developmental delays. To further lower the minimum developmental entry level for the intervention system, prerequisite training lessons (e.g., walking a straight line) were also required. Even with this assistance, some children were still functioning at a level too low for direct entry into the training program. Some children were nonverbal and lacked even rudimentary communication skills. In such cases, the classroom teachers devised additional prerequisite lessons and attempted to develop a simple communication system with the children. These adjustments were very similar to the adjustments made in the previous study with multiply handicapped blind children. Supplementation of the programmed instruction through prerequisite lessons was selected as the most efficient means of lowering the general developmental entry level of the intervention system since this

approach left the main training sequences intact and probably more generally applicable across developmental levels.

Just as in the previous study with multiply impaired blind children, a need for providing activities to insure the generalization to new contexts of the concepts and skills the children acquired during the training program was identified. For example, generalization lessons were written to assist in applying the skills learned in the five mobility lessons to new and different environments. These lessons were developed to provide for three levels of proficiency in the use of landmarks in outdoor travel. The first level employed a series of contrived landmarks and the more advanced levels required the employment of real landmarks in outdoor travel.

Another problem in the programmed materials was that the lessons were too wordy and the format was not easy for a teacher assistant to follow. A major phase of the study which began immediately after the posttesting required complete refinement of the programmed materials. The lessons were designed so that the activity, goal, material, setting, and preparation were easily identified. The major improvement occurred in the actual programmed instructions. In one dimension across the page, the instructions were categorized according to "trainer does," "trainer says," and "student does." In the other dimension down the page, the instructions were divided according to level of performance. The first level required independent performance of the skill after the trainer's commands. The second level required physical prompting of the student by the trainer. The third or lowest level required a demonstration of the desired skill by complete physical guidance from the beginning to end of desired performance. An example of this type of format which requires a gradual shift from total dependence to complete independence is shown in Appendix E. This extensive

revision of the lessons required almost six months after the conclusion of the study.

The goal of the present project was to develop programmed instructional materials to train multi-impaired low vision children to travel more independently in their daily environments. The programmed instruction in mobility which had been designed for multiply handicapped blind children in a previous study, served as a basis for extending the instruction to include children with some useful vision. The motor and concept sections of this material needed only minor revisions. The emphasis in the revisions of these sections was focused on the use of remaining vision. The sensory section was rewritten to emphasize the development of visual utilization skills rather than the other sensory modalities of sound and touch. The mobility section was almost completely revised in order to teach the children to use visual skills in travel. The programmed instruction developed in this project for low vision children will be packaged to complement the material developed for blind children. The total package should provide the teacher of multiply handicapped children with a systematic program of instruction for all of her children with severe visual impairment.

Dissemination

The scale and programmed instruction material will be carefully edited for submission to a publisher. Provision has been made for designing the layout of the materials in a manner which can be easily understood by the consumer. Graphic illustrations are being planned for simplification of directions. Excerpts from the scale and the programmed instruction can be found in Appendices D and E. Project MORE has been assisting in the packaging of the materials for publishing. Project MORE (Mediated Operational Research for Education) is a component of the John F. Kennedy Center of George Peabody

College for Teachers. The major purpose of Project MORE is to develop and disseminate instructional materials to teach moderately and severely retarded persons daily living skills in areas such as personal appearance and personal hygiene.

An effort will be made to secure an agreement with a publisher to print, publish, distribute, market, and disseminate the scales and programmed instruction for the full term of any copyright authorized by U.S.O.E.

A paper on the study will be prepared for the C.E.C. national convention in Kansas City in May of 1978. A paper will be written for the C.E.C. journal, Exceptional Children, summarizing the results of the research in this study. An abstract of the study has been submitte to Low Vision Abstracts.

The teachers at the eight research field sites have already been trained and provided with kits of materials which include the scale, the programmed instruction, and the supplementary materials, In addition, a number of copies of the scale and programmed instruction will be distributed to field readers around the country who have assisted in the evaluation of the materials.

Copies of the final report will be made available upon request to professionals who are interested in the results of the study. A number of requests have been received already from those who have received reports from the previous study with multiply handicapped blind children.

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Appendix A

Raw Data

EXPERIMENTAL GROUP

	Pretest						Posttest				
Subject	M	S	C	MO	T	SA	M	S	C	MO	T
11	62	26	2	8	98	33	62	30	2	8	102
13	64	30	0	0	94	32	76	60	4	14	154
14	48	16	0	0	64	32	58	26	0	0	84
16	72	48	26	40	186	48	90	48	60	40	238
18	66	50	50	30	196	63	76	50	54	30	210
20	70	26	0	0	96	32	84	60	28	34	206
21	60	20	4	0	84	35	64	20	4	2	90
23	58	0	6	0	64	36	62	30	12	4	108
24	64	0	6	0	70	36	66	18	10	6	100
25	74	50	50	50	224	66	84	60	58	50	252
26	64	12	16	18	110	52	80	44	52	34	210
27	68	24	36	50	178	62	82	52	50	44	228
28	72	10	8	10	100	42	78	44	16	30	168
33	76	34	6	16	132	36	86	42	34	22	184
34	84	38	18	22	162	44	90	60	46	30	226
35	78	50	36	28	192	54	82	60	56	40	238
39	64	42	52	36	194	65	80	60	60	44	244
43	50	22	32	20	124	43	86	42	36	22	186
44	50	32	4	0	86	38	58	40	4	12	114
45	44	14	0	0	58	24	44	18	0	0	62
46	42	28	2	10	82	36	58	32	0	8	98
47	NA	30	24	36	90	47	0	36	42	20	98

DISTAL CONTROL GROUP

	Pretest						Posttest				
Subject	M	S	C	MO	T	SA	M	S	C	MO	T
49	86	20	60	46	212	72	82	48	32	20	182
50	24	40	52	50	166	57	64	40	52	50	206
51	70	40	50	50	210	45	76	34	34	22	166
52	86	60	44	40	230		90	60	56	40	246
53	76	30	42	50	198	66	80	46	50	34	210
54	62	20	52	50	184	72	46	22	48	16	132
55	78	10	10	0	98	32	58	18	8	0	84
56	72	23	0	0	95	32	70	30	0	0	100
57	48	28	4	0	80		46	32	4	0	82
38	32	14	0	0	46		32	14	0	0	46
42	58	36	30	10	134		58	36	30	10	134

SITE CONTROL GROUP

Subject	M	S	C	MO	T	SA	M	S	C	MO	T
17	76	60	56	50	242	67	76	56	56	42	230
19	80	60	60	30	230	70	80	60	60	30	230
22	48	30	0	0	78	32	52	32	10	0	94
25	60	20	2	0	82	33	64	28	2	0	94
26	72	58	26	50	206	48	72	58	30	30	190
31	82	60	50	30	222	60	82	60	52	40	234
32	64	38	28	16	146		64	34	28	18	144
36	86	60	58	36	240	68	78	60	60	40	238
37	74	56	58	36	224	68	78	56	60	32	226
40	30	46	60	50	186		60	40	60	50	210
41	64	40	8	2	114	37	58	36	8	16	118

M = Motor Score

S = Sensory Score

C = Concept Score

MO = Mobility Score

T = Total Score

SA = Social Age

Appendix B

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Project Consultants

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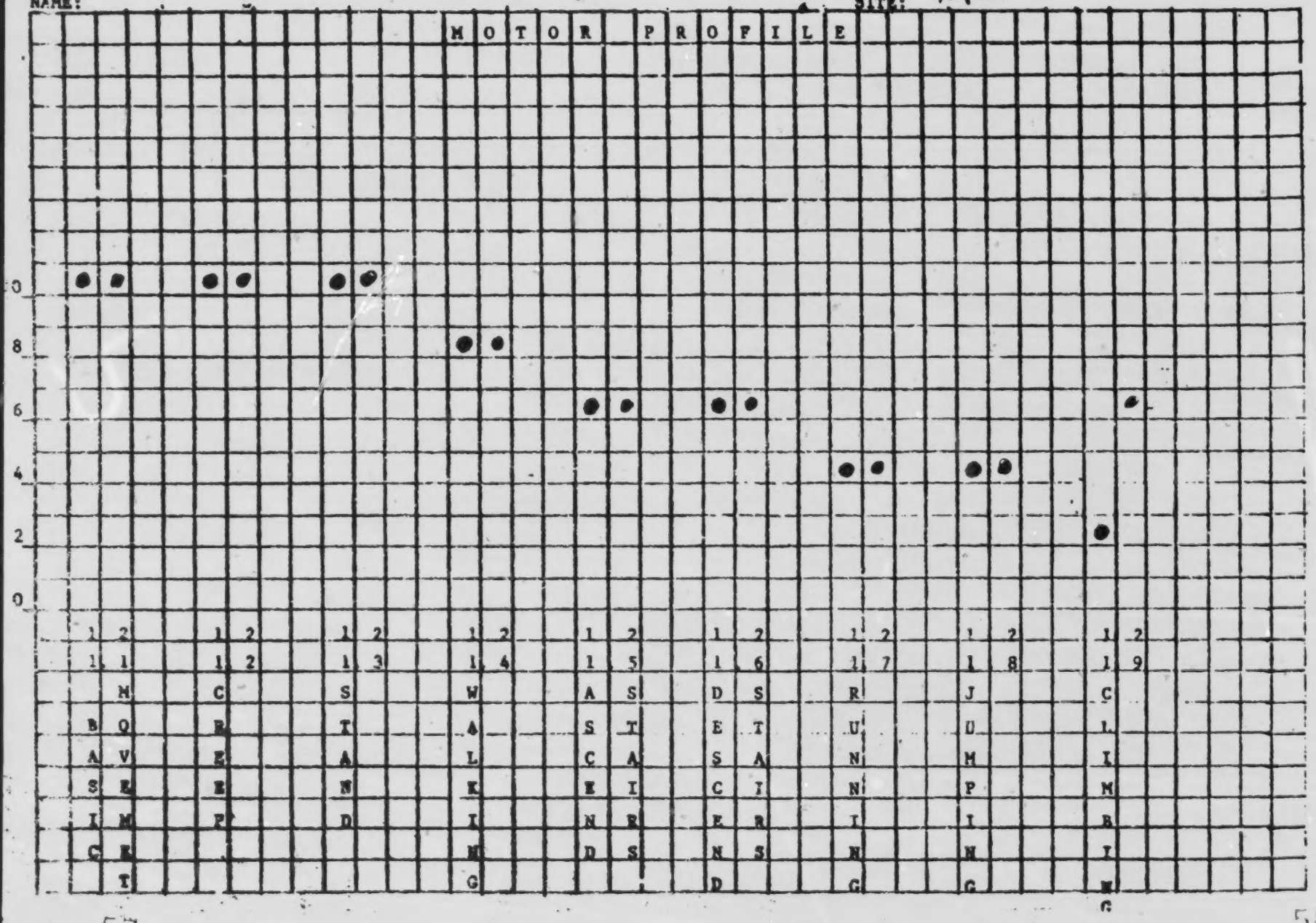
Appendix C

Sample Profile

NAME: SITE: Hope

MOTOR PROFILE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S E E K E I C I N P M
I M P I N R E R I I R
C E M D S N S N N I
T G D G G
G

Appendix D

Peabody Mobility Scale Excerpts

ASSESSMENT SHEET

STUDENT_____

SCORING:
+ = Performed
- = Not Performed
NA = Not Applicable

VISUAL

SKILLS

A. VISUAL AWARENESS AND ATTENTION

1. Demonstrates any awareness of light.	
2. Demonstrates any awareness of light.	
3. Demonstrates any awareness of light in different areas of visual field.	
4. Stares at light source for five seconds.	
5. Demonstrates any awareness of toy.	

B. SCANNING AND TRACKING

1. Follows the light in any manner in three of four trials.	
2. Follows the light in any manner in three of four trials.	
3. Smoothly follow light and maintain contact for complete swing.	
4. Smoothly follow light and maintain contact for complete swing.	
5. Smoothly follow light and maintain contact for complete rotation.	

C. EYE-HAND COORDINATION (Responses performed without searching)

1. Touches or points to circle of light in three of four trials.	
2. Places four of five beads in a cup.	
3. Hits or touches the pieplate with the stick in three of four trials.	
4. Threads four of five beads on a shoestring.	
5. Catches a balloon in three of four trials.	

ASSESSMENT SHEET

STUDENT_____

VISUAL

SKILLS (CONTINUED)

SCORING:
+ = Performed
- = Not Performed
NA = Not Applicable

D. EYE-FOOT COORDINATION

1. Walks the length of the path in three of four trials.	
2. Walks the length of the path in three of four trials.	
3. Walks the length of the path in three of four trials.	
4. Walks the length of the path without touching the balloons.	
5. Kicks the balloon.	

E. DISCRIMINATION OF COLOR

1. Selects the black sample in three of four trials.	
2. Selects the gray sample in three of four trials.	
3. Selects the red sample in three of four trials.	
4. Selects the blue sample in three of four trials.	
5. Selects the green sample in three of four trials.	

Appendix E

Excerpts from Programmed Instructional Materials

2.6.S Discrimination of Direction

Purpose: To help the student learn to visually discriminate between up-down and left-right directions in his environment.

Terminal Objective: At the completion of this item, the student will visually discriminate up-down and left-right in relation to his body and his environment as a basis for orientation.

Materials/Setting: Toy or cookie, room with adequate illumination

Prerequisite: Ability to respond to basic verbal commands or signals such as "Go just like this."

Activity Objective:

2.6.1.A.S. At the completion of this activity the student will visually discriminate "up" and indicate up in relation to his body.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student raises his/her arms above his/her head on command. Otherwise score a "-".

Training Activity:

2.6.1.T.S. a) Have the student stand three to four feet in front of and face to face with the trainer. The teaching area should be well lighted, or at a level of illumination which is optimal for the student. Say "Go just like this" while the trainer raises his arms above his head. Reward the student for imitating the correct movement. If the student imitates the correct movement in six consecutive trials, proceed to 2.T. If the student does not respond correctly, proceed to the next step.

b) Hold a toy or cookie above the student's head. Say "Go just like this" while the trainer raises his/her arms above his/her head. Reward the student for responding correctly and continue this procedure until the student responds correctly and independently in six consecutive trials, then proceed to 2.6.2.T.S. Continue this procedure gradually

Training Activity: (Cont'd)

2.6.1.T.S. reducing the cookie prompt. Then proceed to activity 2.T. If the student still does not respond correctly, proceed to step (c).

c) Say "Go just like this" while the trainer raises his/her arms above his/her head. Use a physical prompt by raising the student's arms after the command. Reward the student and continue this procedure gradually reducing the physical prompt until the student responds correctly and independently in six consecutive trials. Then proceed to activity 2.T.

2.6.S Discrimination of Direction (Cont'd)

Activity Objective:

2.6.2.A.S. At the completion of this activity the student will visually discriminate "down" and indicate down in relation to his/her body.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student puts his/her arms down on the command. Otherwise score a "-".

Training Activity:

2.6.2.T.S. a) Have the student stand three to four feet in front of and face to face with the trainer. Say "Go just like this." while the trainer reaches down toward the floor with his/her arms. Reward the student if he/she imitates the correct movement and continue this procedure by giving the appropriate body movement. If the student imitates the correct movement in six consecutive trials proceed to 3.T. If the student has difficulty, proceed to step (b).

b) Say "Go just like this" while the trainer lowers his/her arms toward the floor. Hold a toy or cookie so that the student must reach down to get it. Reward the student if he/she imitates the correct movement. Continue this procedure gradually reducing the cookie prompt until the student responds correctly and independently in six consecutive trials. Then proceed to activity 3.T. If the student does not respond correctly proceed to step (c).

c) Say "Go just like this" while the trainer lowers his arms toward the floor. Use a physical prompt by actually pulling the student's arms downward after the command. Conti-

2.6.S. Discrimination of Direction (Cont'd)

Training Activity: (Cont'd)

2.6.1.T.S. nue this procedure gradually reducing the physical prompt until the student responds correctly in six consecutive trials. Then proceed to activity 3.T.

2.6.S. Discrimination of Direction (Cont'd)

Activity Objective:

2.6.3.A.S. At the completion of this activity the student will visually discriminate a direction to the right of the trainer and indicate in relation to his/her body.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student puts either arm in the direction indicated by the trainer upon command. Otherwise score a "-".

Training Activity:

2.6.3.T.S. a) Have the student stand three to four feet in front of and face to face with the trainer. Say "Go just like this" while the trainer raises his right arm to the side, parallel to the floor. Reward the student if he/she imitates the correct movement and continue this procedure while giving the appropriate body movement. If the student imitates the correct movement in six consecutive trials, proceed to 4.T. If the student has difficulty, proceed to step (b).

b) Say "Go just like this" while the trainer raises his/her right arm to the side, parallel to the floor. Hold a toy or cookie on the appropriate side of the student within arms' reach. Reward the student if he/she imitates the correct movement (reaches for the cookie). Continue this procedure gradually reducing the cookie prompt until the student responds correctly in six consecutive trials. Then proceed to activity 4.T. If the student does not respond correctly proceed to step (c).

c) Say "Go just like this" while the trainer raises his/her right arm. Use a physical prompt by actually raising the position after the command.

2.6.S. Discrimination of Direction (Cont'd)

Training Activity: (Cont'd)

2.6.3.T.S. Continue this procedure gradually reducing the physical prompt until the student responds correctly in six consecutive trials. Then proceed to 4.T.

2.6.S. Discrimination of Direction (Cont'd)

Activity Objective:

2.6.4.A.S. At the completion of this activity the student will visually discriminate a direction to the left of the trainer and indicate in relation to his/her body.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student puts either arm in a direction indicated by the trainer upon command. Otherwise score a "-".

Training Activity:

2.6.4.T.S. a) Have the student stand three to four feet in front of and face to face with the trainer. Say "Go just like this" while the trainer raises his/her left arm to the side, parallel to the floor. Reward the student if he/she imitates the correct movement and continue this procedure by giving the appropriate body movement. If the student imitates the correct movement in six consecutive trials, proceed to 5.T. If the student has difficulty, proceed to step (b).

b) Say "Go just like this" while the trainer raises his/her left arm to the side, parallel to the floor. Hold a toy or cookie on the appropriate side of the student within arms reach. Reward the student if he imitates the correct movement (reaches for the cookie). Continue this procedure gradually reducing the cookie prompt until the student responds correctly in six consecutive trials. Then proceed the activity 5.T. If the student does not respond correctly proceed to step (c).

c) Say "Go just like this" while the trainer raises his/her left arm in the proper position after the command. Continue this

2.6.S. Discrimination of Direction (Cont'd)

Training Activity: (Cont'd)

2.6.4.T.S. procedure gradually reducing the physical prompt until the student responds correctly in six consecutive trials. Then proceed to 5.T.

2.6.S. Discrimination of Direction (Cont'd)

Activity Objective:	Training Activity:
2.6.5.A.S. At the completion of this activity the student will visually discriminate "up", "down", "right", "left", and indicate in relation to his/her body.	2.6.5.T.S. a) Have the student stand three or four feet in front of and face to face with the trainer. Say "Go just like this" while the trainer raises his/her arms above his/her head. Reward the student if he/she imitates the correct movement. If he/she has difficulty, return to step 1. Say "Go just like this" while the trainer reaches down toward the floor with his arms. Reward the student if he imitates the correct movement. If he has difficulty, return to step 2. Say "Go just like this" while the trainer raises his/her right arm to the side. Reward the student if he/she imitates the correct movement. If he/she has difficulty, return to step 3. Say "Go just like this" while the trainer raises his/her left arm to the side. Reward the student if he/she imitates the correct movement. If he/she has difficulty, return to step 4. When the student correctly imitates each movement in six consecutive trials, proceed to step (b). If the student does not respond correctly in any of the movements, return to the appropriate section of this lesson.

2.6.S. Discrimination of Direction (Cont'd)

Training Activity: (Cont'd)

c) Give the student commands to "Go just like this" while giving each of the four signals at random until he/she responds correctly in six consecutive trials for five consecutive days. If the student has difficulty, return to the appropriate section of this lesson and repeat the directions.

4.1.R. Squaring off for Direction Taking

Purpose: To help the student learn to use environmental objects or structures for squaring off for direction taking to guide travel.

Terminal Objective: At the completion of this activity the student will use direction taking against a wall or sidewalk as a akill in guiding his travel to a specific destination.

Materials/Setting: A large room, two chairs, and an outdoor area with a sidewalk and about 30 feet of a grassy or dirt surface.

Prerequisite: Walking in a straight line.

Activity Objective:

4.1.1.A.R. At the completion of this activity the student will demonstrate squaring off against a wall at a position beside a chair.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student walks to the chair and squares off against the wall. Otherwise score a "-".

Training Activity:

4.1.1.T.R. a) Guide the student to an open room and position him beside a chair with his back against a wall. Say "Stand like this with your back against the wall." Then take him to a position facing a chair about five feet from the chair. Say "Go to the chair and stand beside the chair with your back against the wall." Walk with the student to the chair and help him to locate the correct position. Reward the student and return to the original starting position. Say "Go to the chair and stand beside the chair with your back against the wall." If the student moves to the chair and stands in the correct position reward him and continue this procedure until he responds correctly and independently in six consecutive trials. Then proceed to activity 4.1.2.T.R. If the student does not respond correctly proceed to step (b).

b) With the student repositioned facing the chair about five feet from the chair, say "Go to the chair... and stand beside the chair with your back against the wall." Provide verbal or physical prompts to get him moving. If

Training Activity: (con't)

4.1.1.T. the student moves to the chair and stands in the correct position reward him/her and continue this procedure until he responds correctly in six consecutive trials. Then proceed to 4.1.2.T.R. If the student moves to the chair but does not take the correct position, proceed to step (c).

c) With the student repositioned facing the chair about five feet from the chair, say, "Go to the chair...and stand with your back against the wall." If the student does not move to the correct position, physically turn his body until his/her back is against the wall. Then reward him/her. Repeat these procedures as necessary until the student responds correctly. Gradually reduce assistance and when the student responds correctly in six consecutive trials, proceed to 4.1.2.T.R.

4.1.RSquaring off for Direction Taking (con't)

Activity Objective:

4.1.2.A.R. At the completion of this activity the student will walk five feet to a chair, align his body against the wall, walk to a chair on the opposite side of a 20 foot room and find a ball.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student walks to the chair, sqaures off against the wall and walks to the chair on the opposite side of the room. Otherwise score a "-".

Training Activity:

4.1.2.T.R.a) Position two chairs at opposite ends of a twenty foot room with the backs of the chairs against the walls. Place a toy or ball in one of the chairs. Position the student at a distance of five feet from the other chair. Have the student face the chair. Say "Go to the chair and put your back against the wall." If the student has difficulty return to the preceeding step. "Now, walk to the chair on the other side of the room to find the toy." Walk with the student to the second chair. Have him pick up the toy and reward him. Assist him in returning to the original starting position. Say "Go to the chair, put your back against the wall, and walk to the chair on the other side of the room to find the toy." If the student responds correctly, reward him and continue this procedure until he responds correctly in six consecutive trials. Then proceed to activity 4.1.3.T.R.If the student has difficulty, proceed to step (b).

b) With the student facing the empty chair say "Go to the chair and put your back against the seat of the chair." After the student assumes the correct position, say "Now, walk to the chair on the other side of the room and find the toy." Provide verbal or physical prompts to assist the student in moving to the second chair and picking up the toy. If the student deviates from a straight line, go to prerequisite lesson on walking in a straight line. If the student walks to the chair, align his body against the wall and

Training Activity: (con't)

4.1.2.T.R. walk to the chair on the opposite side of the room, reward him/her and continue this procedure until he/she responds correctly without prompts in six consecutive trials. Then proceed to 4.1.3.T.R. If the student has difficulty, proceed to step (c).

c) Repeat the basic procedures of steps (a) and (b) providing at least two demonstrations (i.e., help the student pick up the toy). After the student picks up the toy reward him/her. Repeat these procedures as necessary until the student responds correctly. Gradually reduce assistance and when the student responds correctly in six consecutive trials, proceed to the next step.

4.1.R. Squaring off for Direction Taking (con't)

Activity Objective:

4.1.3.A.R. At the completion of this activity the student will walk five feet to a chair against the bottom step of some outdoor steps, align his/her body against the bottom step, and walk to another chair in a straight line and perpendicular to the position of the first chair at a distance of 20 feet.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student walks to the chair, squares off against the steps and walks to the other chair at a distance of 20 feet without deviating. Otherwise score a "-".

Training Activity:

4.1.3.T.R. a) Position two chairs so that the first chair is against the edge of an outdoor step and facing a second chair at a distance of 20 feet across an open area from the first chair. Position the student facing the first chair at a distance of five feet from the first chair against the steps. Say "Go to the chair and put your heels against the step." If the student has difficulty help him/her to find the correct position. Say "Now, walk to the chair on the other chair on the steps and find the toy." Walk with the student to the second chair. Have him pick up the toy and reward him. Assist him/her in returning to the original position. Say "Go to the chair, put your heels against the step, and walk to the other chair to find the toy." If the student responds correctly reward him/her and continue this procedure until he/she responds correctly in six consecutive trials. Then, proceed to activity 4.1.4.T.R. If the student has difficulty, proceed to step (b).

b) With the student facing the chair, say "Go to the chair and put your heels against the step." Help the student to assume the correct position. Say "Now, walk to the other chair and find the toy." Provide verbal or physical prompts to assist the student in moving to the second chair and picking up the toy. If the student deviates from a straight line more than four feet go to the prerequisite lesson on walking in a straight line. If the student has difficulty in squaring off and

Training Activity: (con't)

4.1.3.T.R. walking in a perpendicular line, proceed to step (c). If the student walks to the chair, aligns his/her body against the step and walks to the other chair, reward him/her and continue this procedure until he/she responds correctly in six consecutive trials. Then proceed to activity 4.1.4.T.R. If the student has difficulty, proceed to step (c).

c) Repeat the basic procedures of steps (a) and (b) providing at least two demonstrations (i.e., walk with the student to the chair after squaring of with the first chair). After the student responds correctly reward him/her. Repeat these procedures until the student responds correctly. Gradually reduce assistance and when the student responds correctly in six consecutive trials proceed to the next activity.

4.1.RSquaring off for Direction Taking (con't)

Activity Objective:

4.1.4.A.R. At the completion of this activity the student will walk five feet on a sidewalk to a chair, align the heels of his/her feet against the sidewalk and walk to a chair at a distance of 20 feet in a staright line and perpendicular to his position on the sidewalk.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student walks to the chair, squares off against the sidewalk and walks to the other chair at a distance of 20 feet without deviating more than four feet from a line between the two chairs. Otherwise score a "-".

Training Activity:

4.1.4.T.R.a) Position two chairs so that the first chair is on edge of a sidewalk and facing a second chair at a distance of 20 feet across an open area from the first chair. Place a toy or ball in the second chair. Position the student facing the first chair at a distance of five feet from the first chair on the sidewalk. Say "Go to the chair and put your heels against the edge of the sidewalk." If the student has difficulty, help him/her to find the correct position. Say "Now, walk to the chair on the grass and find the toy." Walk with the student to the second chair. Have him/her pick up the toy and reward him/her. Assist him/her in returning to the original position. Say "Go to the chair, put your heels against the sidewalk and walk to the other chair to find the toy." If the student responds correctly reward him/her and continue this procedure until he/she responds correctly in six consecutive trials. Then proceed to activity 4.1.5.T.R. If the student has difficulty proceed to step (b).

b) With the student facing the chair, say "Go to the chair and put your heels against the sidewalk." Help the student to assume the correct position. Say "Now, walk to the other chair and find the toy." Provide verbal or physical prompts to assist the student in moving to the second chair and picking up the toy. If the student deviates from a straight line more than four feet go to the

Training Activity: (con't)

4.1.4.T.R. prerequisite lesson on walking a straight line. If the student has difficulty in squaring off and walking in a perpendicular line proceed to (c). If the student walks to the chair, aligns his/her body against the sidewalk and walks to the other chair, reward him/her and continue this procedure until he responds correctly in six consecutive trials. Then proceed to activity 4.1.5.T.R. If the student has difficulty, proceed to step (c).

c) Repeat the basic procedures of steps (a) and (b) providing at least two demonstrations (i.e., walk with the student to the chair after squaring off with the sidewalk). After the student responds correctly, reward him/her. Repeat these procedures as necessary until the student responds correctly. Gradually reduce assistance and when the student responds correctly in six consecutive trials, proceed to the next activity.

4.1.R Squaring off for Direction Taking (con't)

Activity Objective:

4.1.5.A.R. At the completion of this activity the student will walk five feet on a sidewalk to a chair, align his heels against the sidewalk and walk to a second chair at a distance of 30 feet in a straight line and perpendicular to this position on the sidewalk.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to respond to a command.

Criteria: Score a "+" for the trial if the student walks to the chair, squares off against the sidewalk and walks to the other chair at a distance of 30 feet without deviating more than six feet from a line between the two chairs. Otherwise score a "-".

Training Activity:

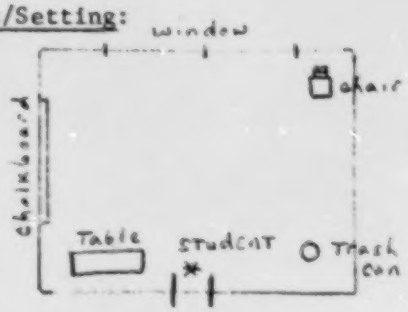
4.1.5.T.R. a) Repeat the steps in 4.1.4.T.R. but using a distance of 30 feet between chairs.

4.2.R. Localization of Discriminable Landmarks

Purpose: To help the student learn to locate and identify common objects in a room (discriminable landmarks).

Terminal Objective: At the completion of this item, the student will enter a room and locate and identify 5 common discriminable landmarks.

Materials/Setting:



A crumpled ball of paper, a brightly colored ball or toy. Then room should contain a window, a table, a chair, a chalkboard (or bulletin board, picture, etc.) and a trash can, prearranged so that succeeding scale items are at least 10 feet apart (see diagram for an example). Follow the directions given in each step.

Activity Objective:

4.2.1.A.R. At the completion of this activity the student will enter a room, locate and identify a window.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to go to the window.

Criteria: Score a "+" for the trial if the student goes directly to the window and touches it. Otherwise score a "-".

Training Activity:

4.2.1.T.R. a) Bring the student to the doorway of a prearranged room (see diagram). Have the student face inside the room. Say "Go to the window, touch it." or "Find the window, touch it." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then proceed to 4.2.2.A.R. . If the student does not respond correctly then proceed to step (b).

b) Stand in the doorway with the student. Say "Let's go find the window.", then walk with the student to the window, touch the window and say "Here is the window." Then tell the student "Touch the window." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then repeat step (a). If the student does not respond correctly proceed to step (c).

c) Stand in front of the window with the student. Say "Touch

Training Activity: (con't)

4.2.1.T.R. the window." while raising one of the student's hands to touch the window. Reward the student and continue this procedure gradually reducing assistance until the student responds correctly and independently in six consecutive trials, then repeat step (a).

4.2.R. Localization of Discriminable Landmarks (con't)

Activity Objective:

4.2.2.A.R. At the completion of this activity the student will enter a room, locate and identify a table.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to go to the table.

Criteria: Score a "+" for the trial if the student goes directly to the table and puts the ball on it or touches it. Otherwise score a "-".

Training Activity:

4.2.2.T.R. a) Bring the studen t to the doorway of a prearranged room (see diagram). Have the student face inside the room. Give the student a ball and say "Go to the table, put the ball on the table." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then proceed to 4.2.3.A.R. . If the student does not respond correctly then proceed to step (b).

b) Stand in the doorway with the student. Say "Let's go put the ball on the table.", then walk with the student to the table, put the ball on the table and say "Here is the table." Then give the ball to the student and say "Put the ball on the table." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then repeat step (a). If the student does not respond correctly proceed to step (c).

c) Stand in front of the table with the student. Give the student a ball and say "Put the ball on the table." while raising the student's hand with the ball to put it on the table. Reward the student and continue this procedure gradually reducing assistance until the student responds correctly and independently in six consecutive trials, then repeat step (b).

4.2.R. Localization of Discriminable Landmarks (con't)

Activity Objective:

4.2.3.A.R. At the completion of this activity the student will enter a room, find and identify a chair.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to go to the chair.

Criteria: Score a "+" for the trial if the student goes directly to the chair and sits down. Otherwise score a "-".

Training Activity:

4.2.3.T.R. a) Bring the student to the doorway of a prearranged room (see diagram). Have the student face inside the room. Say "Go to the chair, sit down." or "Find the chair, sit down." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then proceed to 4.2.4.A.R. If the student does not respond correctly then proceed to step (b).

b) Stand in the doorway with the student. Say "Let's go find the chair and sit down.", then walk with the student to the chair, touch the chair and say "Here is the chair, sit down." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then repeat step (a). If the student does not respond correctly proceed to step (c).

c) Stand in front of the chair with the student. Say "Sit down on the chair." while physically prompting the student to sit down on the chair. Reward the student and continue this procedure gradually reducing assistance until the student responds correctly and independently in six consecutive trials, then repeat step (b).

4.2.R.Localization of Discriminable Landmarks (con't)

Activity Objective:

4.2.4.A.R. At the completion of this activity the student will enter a room, find and identify a chalkboard.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to go to the chalkboard.

Criteria: Score a "+" for the trial if the student goes directly to the chalkboard and touches it. Otherwise score a "-".

Training Activity:

4.2.4.T.R.a) Bring the student to the doorway of a prearranged room (see diagram). Have the student face inside the room. Say "Go to the chalkboard." or "Find the chalkboard." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then proceed to 4.2.5.A.R. If the student does not respond correctly then proceed to step (b).

b) Stand in the doorway with the student. Say "Let's go find the chalkboard.", then walk with the student to the chalkboard and say "Here is the chalkboard." Then tell the student "Touch the chalkboard." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then repeat step (a). If the student does not respond correctly proceed to step (c).

c) Stand in front of the chalkboard with the student. Say "Touch the chalkboard." while raising one of the student's hands to touch the chalkboard. Reward the student and continue this procedure gradually reducing assistance until the student responds correctly and independently in six consecutive trials, then repeat to step (b).

4.2.R.Localization of Discriminable Landmarks (con't)

Activity Objective:

4.2.5.A.R. At the completion of this activity the student will enter a room, find and identify a trash can.

Recording Procedure:

No. of trials: 20

Definition of trial: One presentation of an opportunity to go to the trash can.

Criteria: Score a "+" for the trial if the student goes directly to the trash can and throws the paper away. Otherwise score a "-".

Training Activity:

4.2.5.T.R.a) Bring the student to the doorway of a prearranged room (see diagram). Have the student face inside the room. Give the student the ball of crumpled paper and say "Go to the trash can." or "Find the trash can, throw this away." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then proceed to 4.3.R. . If the student does not respond correctly then proceed to step (b).

b) Stand in the doorway with the student. Say "Let's go find the trash can.", then walk with the student to the trash can, touch the trash can and say "Here is the trash can." Then tell the student "Throw the paper away." Reward the student if he/she responds correctly and continue this procedure until the student responds correctly in six consecutive trials, then repeat step (a). If the student does not respond correctly proceed to step (c).

c) Stand in front of the trash can with the student. Say "Throw the paper away." while raising the student's hand with the paper to assist in throwing the paper away. Reward the student and continue this procedure gradually reducing assistance until the student responds correctly and independently in six consecutive trials, then repeat step (b).

Appendix F

Vision Screening Forms

Orientation and Mobility Research Project

George Peabody College for Teachers

Nashville, Tennessee 1976-1977

Experimental Edition: Peabody Eye Report/Low Vision Checklist

Randall K. Harley

John B. Merbler, Jr.

William R. Pupke

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EYE REPORT/LOW VISION CHECKLIST

Name: _____ Birthdate: _____

School/Institution: _____ Sex: _____

I. Eye History

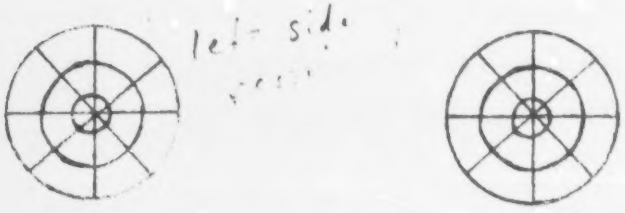
1. Age at onset _____

2. Congenital _____

Type of Eye Condition(s): _____

Field of Vision: Is there a limitation? If so, record the results on this chart:

left right



Procedure: Identifying and recording field of vision blank spots. Use two penlights. Turn on and hold one penlight directly in front of S's eyes approximately 18 inches away. The second penlight will be held stationary along varying points on three concentric circles starting with the outer circle and working in (see diagram). As the second penlight moves to a point on the circle, cut off the first penlight and turn on the second. Record a blank spot on diagram if S does not shift gaze from first penlight to second. Do this evaluation under normal lighting conditions and in the dark.

Macular pathology present? Explain.

Nystagmus present?

Muscle imbalance present? Explain.

II. Measurements

Acuity (if measureable):

	Without Correction		With Correction	
	Near	Far	Near	Far
OD:				
OS:				
Both:				

Does S wear glasses? If yes, does he readily accept them? When will he wear them?

Does S use a low vision aid? Does he readily accept it? If yes, what type and for what purpose?

Does S's vision fluctuate? If so, when and how much (general estimate)?

III. Prognosis of Eye Condition

_____Capable of Improving

_____Stable

_____Deteriorating

_____Uncertain

Has S had ocular surgery or expected to have this type of surgery? If yes, explain.

Medication prescribed for S.

Ocular:

or

Physical:

Are there any special lighting requirements? i.e., high illumination.

IV. A. Visual Behavior - Daily Observation (NO = Not Observable) (O= observe) (E= evaluate)

1. Does S function _____visually _____tactually _____both in daily activities?

2. Is S treated as sighted (S) or blind (B)_____at home _____in class _____in the dorm?

3. Does S exhibit any visual mannerisms? (i.e., light flicking, sitting too close to TV or staring at bright lights).

B. Visual Behavior - Evaluation

Setting: Use a quiet room in which lighting may be easily controlled to gain high and low illumination. The evaluation is best performed by two Evaluators (E).

Materials: Two penlights, large and small brightly colored objects, colored cellophane or color screen (filter), S's favorite toys or objects.

1. (O) Is S aware of light sources? (i.e., startles, looks toward light, or reaches for light?)

+ (E) a) Seat S in room with good overhead lighting. Shine penlight in front of S's face at a distance of one foot. Observe if S indicates he sees the light. If S does not respond,

b) flicker the light across S's eyes and observe response. If S does not respond,

c) black out the room and repeat (a) and (b) above and observe response.

d) Repeat step (a), (b), or (c) above, which ever S passed and use colored lights. Note difference in S's response to white and colored lights.

— 2. (O) From step 1, was S sensitive to light (i.e., did S close eyes or turn head away from the light)?

3. (O) Does S demonstrate a preference in using one eye more than the other? (i.e., does S turn head to side when playing or looking at light or objects).

(E) Seat S. Hold a colored light in front of S and cover one eye then the other and observe if S is upset, turns head, or tries to pull the cover off.

4. (O) Distance at which S has movement perception.

- (E) a) Seat S. El, with shoes off, walks in front of S at distance of three feet, then one foot. Arrange a good contrast between the background (wall) and El's clothing. Observe whether S shows any reaction to the movement or ask S to point to E. If S does not respond,

b) face S toward some light source, (i.e., window, lights on ceiling). Move an open hand up and down in front of S's face, first at one foot then at three or four inches. Ask S if movement can be seen or observe any response to movement. Check this by not waving hand and ask S if movement can be seen.

5. (O) Facial recognition.

(E) a) Seat S. Have S's teacher or another familiar person to the S come in and observe if S recognized the person in four feet or one foot. May ask the S who is person in front.

6. (O) Ability to do figure-ground discrimination activities.

(E) a) Stand S near table. Using S's favorite toys and objects of varying size and color (from large toys to M&M candies) present them to the S one at a time and then place them on the table in front of S. Observe if S finds objects visually. Restrain any tactual searching without looking.

b) Repeat (a) if S successfully finds objects on table and this time put them on the floor.

7. (O) S travel in room environment under high and low illumination.

(E) a) Set up a travel situation in a room combining common building objects and features. Have S move around room by either:

1) E calling S to come over to the opposite side of room. E may have to repeat this to cause S to contend with all the objects in the room.

2) Asking S to find a window or some other bright light in the room. E does not stand near the window.

3) Asking S to find an object in the room such as a trash can, chair, or favorite toy on the table, etc.

Use objects which would add to the safety of the evaluation. The run should include movement close and away from walls, large and small furniture, (desk or table, chair, stool, wastebasket), people, simulated steps, a door and doorway or restricted pathway and various size and colored objects on the floor. Also some sort of low overhang possibly made from paper.

Observe whether S kicks, trips, bumps or hits objects.

7. Does S trip _____ on stairs _____slope changes _____ objects on floor?
Does S bump into _____ people _____ walls _____doors/doorways _____ furniture?

8. Can S visually pick out an object on floor?

V. Developmental Background

Additional Handicapping Conditions:

_____ physical (i.e., braces, hearing impairment)
Explain:

_____mental (i.e., retardation, learning disability)
Explain:

_____ emotional (i.e., depression, hyperactive)
Explain:

Likes/Dislikes: i.e., prefers seat activities or playground activities (specify).

Communication Methods

Does S possess receptive language? Explain.

_____ verbal

_____ manual

_____ symbol/sign

Does S possess expressive language? Explain.

_____ verbal

_____ manual

_____ symbol/sign

Appendix G

Teacher Evaluation Forms

GEORGE PEABODY COLLEGE

ORIENTATION AND MOBILITY RESEARCH PROJECT

Weekly Reporting Form Trainer _____

Week of _____ Activity No. _____

Please fill out this form on each lesson each week. Please answer yes or no; Please make recommendations regarding any questions answered no.

1. Does the child show interest in the materials? Yes_____ No_____
2. Do you find these materials interesting to work with? Yes_____ No_____
3. Do you feel this lesson is adequately designed to reach the desired objectives? Yes_____ No_____
4. Do you feel the lesson objectives are relevant and realistic? Yes_____ No_____
5. Do you feel this lesson is properly task analyzed (i.e. small sequential steps and proper ordering)? Yes_____ No_____
6. Do you feel that the instructional procedures are clearly presented? Yes_____ No_____
7. Do you feel that the recording procedures are clear? Yes_____ No_____
8. Have a sufficient number of trials been provided for this lesson? Yes_____ No_____
9. How much time have you spent on this lesson this week?
10. Was the entry level of this lesson sufficiently low to reach the child? Yes_____ No_____
11. Are more prerequisites lessons needed? Yes_____ No_____
12. Are there additional areas of instruction not included in this program that are needed by the child? Yes_____ No_____

COMMENTS: _____

George Peabody College
O & M Research Project

Record Form
Score "+" for correct response
Score "-" for incorrect response

CHILD'S NAME _____ TRAINING ACTIVITY NO. _____

TRAINER _____ Week of _____

TRIAL	Monday	Tuesday	Wednesday	Thursday	Friday
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					

Comments: Use back of page.